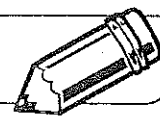
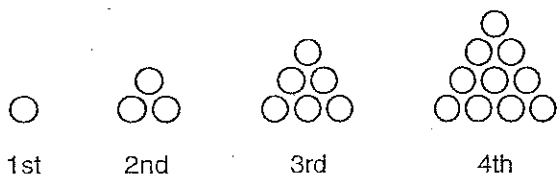
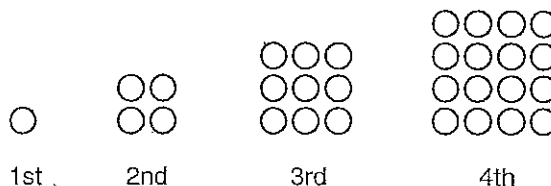
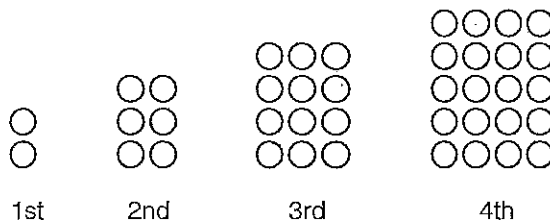


LESSON
3.1**Number Patterns**

Triangular, square, and rectangular numbers are examples of number patterns that can be shown by geometric arrangements of dots. Study the number patterns shown below.

Triangular Numbers**Square Numbers****Rectangular Numbers**

1. Use the number patterns to complete the table.

Number of Dots in Arrangement										
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Triangular Number	1	3	6	10						
Square Number	1	4	9	16						
Rectangular Number	2	6	12	20						

2. What is the 11th triangular number? _____

How does the 11th triangular number compare to the 10th triangular number?

LESSON
3•1**Number Patterns** *continued*

3. Describe what you notice about the sum of 2 triangular numbers that are next to each other in the table.

4. Add the second square number and the second rectangular number; the third square number and the third rectangular number. What do you notice about the sum of a square number and its corresponding rectangular number?

5. Describe any other patterns you notice.

6. You can write triangular numbers as the sum of 4 triangular numbers when repetitions are allowed. For example: $6 = 1 + 1 + 1 + 3$

Find 3 other triangular numbers that can be written as sums of *exactly* 4 triangular numbers.

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}}$$

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